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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,553	02/10/2004	Weimin Li	MI22-2497	5458
21567	7590	08/30/2005	EXAMINER	
WELLS ST. JOHN P.S. 601 W. FIRST AVENUE, SUITE 1300 SPOKANE, WA 99201			KOSLOW, CAROL M	
			ART UNIT	PAPER NUMBER
			1755	

DATE MAILED: 08/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/776,553

Applicant(s)

LI ET AL.

Examiner

C. Melissa Koslow

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 67-74 is/are pending in the application.
- 4a) Of the above claim(s) 72-74 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 67-71 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/6/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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This action is in response to applicants' amendment of 6 July 2005. The terminal disclaimer filed on 6 July 2005 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. patents 6,828,683 and 6,719,919 has been reviewed and is accepted. The terminal disclaimer has been recorded. Accordingly, the obviousness-type double patenting rejections are withdrawn. The amendments to the claims 72-74 have overcome the rejections based on these claims. Applicant's arguments with respect to the remaining rejections have been fully considered but they are not persuasive.

It is noted that all the cited references in the IDS of 6 July 2005 are non-analogous and not material to the patentability of the claimed composition.

Newly submitted claims 72-74 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The amendment to these claims have changed these claims so that they directed to a semiconductor device, not to the examined semiconductor barrier layer composition. The device is independent or distinct for the reasons given in the restriction in the patent application 10/219,041 between the composition and the device.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 72-74 withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claims 67-71 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a composition consisting essentially of $\text{Si}_3\text{N}_{4/3}$ and $(\text{CH}_3)_{4/3}\text{Si}_3\text{N}_{8/3}$, does not reasonably provide enablement for a composition comprising $(\text{CH}_3)_x\text{Si}_3\text{N}_{4-x}$, where $0 < x \leq 4$

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or a composition comprising $(\text{CH}_3)_x\text{Si}_3\text{N}_{4-x}$, where $0 < x \leq 4$, and $\text{Si}_3\text{N}_{4/3}$. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

Column 4, lines 20-43 teach the composition consisting essentially of $\text{Si}_3\text{N}_{4/3}$ and $(\text{CH}_3)_{4/3}\text{Si}_3\text{N}_{8/3}$ result from the disclosed process. While the specification generally discloses the claimed compositions, there is no teaching as to how these compositions are produced. In addition, $(\text{CH}_3)_x\text{Si}_3\text{N}_{4-x}$, where $0 < x \leq 4$ is an ion having a positive charge of +1.4 to +8 and $\text{Si}_3\text{N}_{4/3}$ is an ion having a +4 charge. One of ordinary skill in the art would expect this ion to react with the atmosphere and thus the resulting composition of matter would not have the claimed formula.

Applicants' arguments with respect to this rejection are not convincing since lines 15-17 on page 9 states the process in page 8, line 20 through page 9, line 14 forms a composition consisting essentially of $\text{Si}_3\text{N}_{4/3}$ and $(\text{CH}_3)_{4/3}\text{Si}_3\text{N}_{8/3}$. Thus the specification does not enable one of ordinary skill in the art to produce the claimed compositions of a composition comprising $(\text{CH}_3)_x\text{Si}_3\text{N}_{4-x}$, where $0 < x \leq 4$ or a composition comprising $(\text{CH}_3)_x\text{Si}_3\text{N}_{4-x}$, where $0 < x \leq 4$, and $\text{Si}_3\text{N}_{4/3}$.

The Examiner determined $\text{Si}_3\text{N}_{4/3}$ and $(\text{CH}_3)_x\text{Si}_3\text{N}_{4-x}$, where $0 < x \leq 4$ were ions from the fact that these compounds are not charge balanced, i.e. have a valence state of 0. To determine the valences of these compounds, the Examiner added up the total number of negative ions and the total number of positive ions. For example, to determine the valence state of $\text{Si}_3\text{N}_{4/3}$, the valence state of Si_3 , which is +12, is added to the valence state of $\text{N}_{4/3}$, which is -4, resulting in

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a total valence state of +8. Applicant has not provided any evidence that the claimed compounds are not ions and that they would not react with the atmosphere. The rejection is maintained.

Claim 71 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

This claim is indefinite since the amount of Si_3N_y is not defined. Thus it is unclear if the remaining about 80 up to less than 100 mol% of the claimed composition of matter is composed of Si_3N_y or if there are addition undefined materials present and if so the amounts of these undefined materials.

The amendment did not overcome this rejection and therefore it is maintained.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (571) 272-1371. The examiner can normally be reached on Monday-Friday from 8:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached at (571) 272-1233.

The fax number for all official communications is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cmk
August 26, 2005


C. Melissa Koslow
Primary Examiner
Tech. Center 1700